TC-W421

SERVICE MANUAL

US Model
Canadian Model
E Model

TC-W421 is the cassette deck section of the stereo component system SEN-421CD.

Model Name Using Similar Mechanism	HST-121/221
Tape Transport Mechanism Type	TCM-180VW-H5

SPECIFICATIONS

Recording system	4-track 2-channel stereo
Frequency response (DOLBY NR OFF)	
	With TYPE II cassette (Sony UCX-S): 30 – 14,000 Hz (±3 dB)
	With TYPE I cassette (Sony HF-S): 30 – 13,000 Hz (±3 dB)
Wow and flutter	0.12% WRMS (NAB)
Dimensions	Approx. 430 x 120 x 280 mm (w/h/d)
	(17 x $4^{3}/_{4}$ x $11^{1}/_{8}$ inches)
Weight	Approx. 3.5 kg (7 lb 12 oz) net

Design and specifications are subject to change without notice.

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol ⧈ are trademarks of Dolby Laboratories Licensing Corporation.

使用時は添付資料も参照のこと
Refer to the additional documents.

STEREO CASSETTE DECK

SONY®

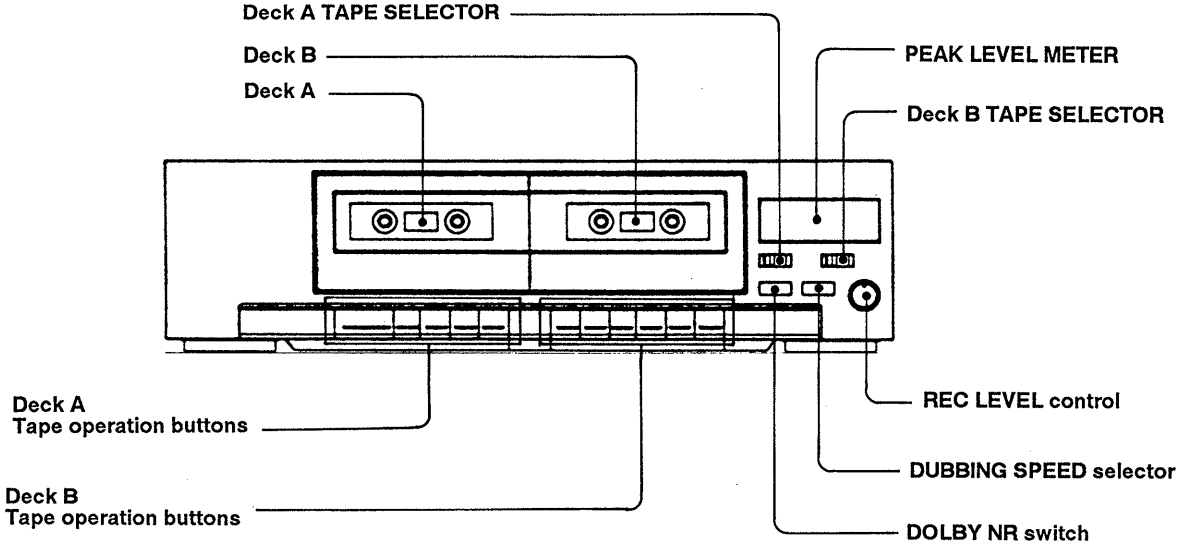
TABLE OF CONTENTS

Section	*Title*	*Page*
Specifications		1
1.	**GENERAL**	2
2.	**ADJUSTMENTS**	
2-1.	Mechanical Adjustment	3
2-2.	Electrical Adjustments	3
3.	**DIAGRAMS**	
3-1.	Block Diagram	7
3-2.	Printed Wiring Boards	9
3-3.	Schematic Diagram	11
4.	**EXPLODED VIEWS**	15
5.	**ELECTRICAL PARTS LIST**	18

SECTION 1
GENERAL

PARTS IDENTIFICATION

– Front Panel –



SECTION 2
ADJUSTMENTS

2-1. MECHANICAL ADJUSTMENT

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   record/playback head — pinch rollers
   erase head — rubber belts
   capstan — idler
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed in the rated power supply voltage unless otherwise noted.

Torque Measurement

Mode	Torque Meter	Meter reading
FWD	CQ-102C	30 – 70 g•cm (0.42 – 0.97 oz•inch)
FWD back tension	CQ-102C	1 – 5 g•cm (0.014 to 0.063 oz•inch)
FF, REW	CQ-201B	70 – 160 g•cm (0.97 – 2.21 oz•inch)

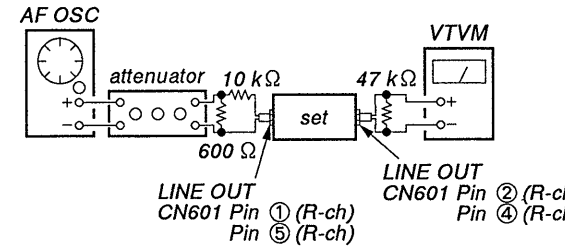
2-2. ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in the service manual. As a rule, adjustments about playback should be performed before those about recording. The adjustments should be performed for L-CH and R-CH.

- Switches and controls should be set as follows unless otherwise specified.
  DOLBY NR switch: OFF

- Standard Record:
  Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

– Record Mode –



0 dB=0.775 V

- **Standard Input Level**

Input terminal	LINE IN (CN601 Pin ①, ⑤)
Source inpedance	10 kΩ
Input level	0.25 V (– 10 dB)

- **Standard Output Level**

Output terminal	LINE OUT (CN601 Pin ②, ④)
Load inpedance	47kΩ
Output level	0.32 V (– 7.7 dB)

- **Test tape**

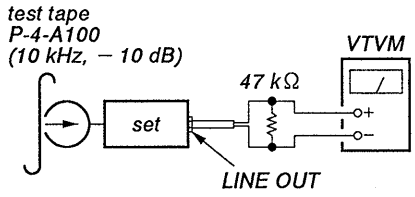
Type	Signal	Used for
P-4-A100	10 kHz, – 10 dB	Azimuth adjustment
P-4-L300	315 Hz, 0 dB	PB leevl adjustment
WS-48A	3 kHz, 0 dB	Tape speed adjustment

Record/Playback Head Azimuth Adjustment

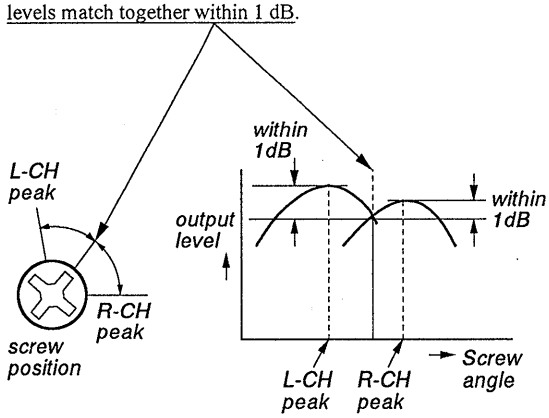
DECK A DECK B

Procedure:

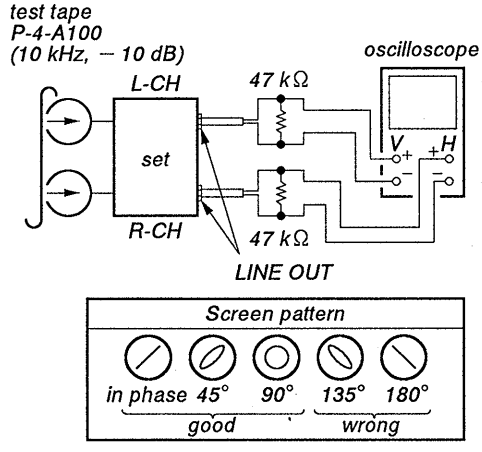
1. Mode: Playback



2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1 dB.

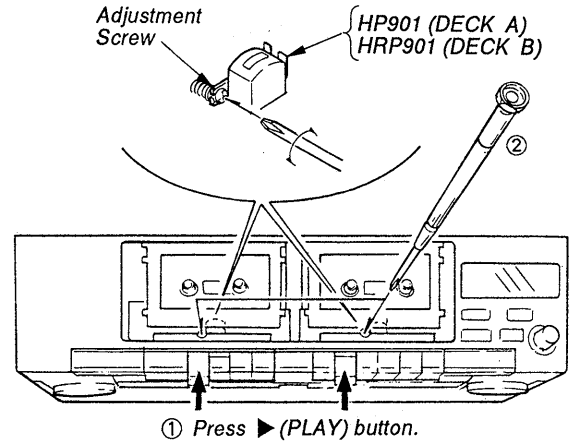


3. Phase Check
   Mode: Playback



4. After the adjustment, lock the screws with locking compound.

Adjustment Location: Record/Playback head

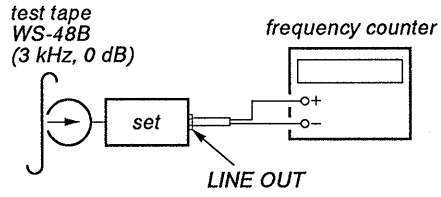


Tape Speed Adjustment DECK A DECK B

Procedure:

Mode: Playback

Perform high speed adjustment before normal speed adjustment.



(high speed adjustment)

1. Set to FWD playback mode.
2. Short test pin CN504 on Main board.
3. Adjust RV501 on main board so that the frequency counter reading becomes 6,000 ± 60 Hz.
4. After adjustment, disconnect CN504 shorted in step 2.

(normal speed adjustment)

1. Set to FWD playback mode.
2. Adjust RV502 on Main board so that the frequency counter reading becomes 3,000 ± 30 Hz.

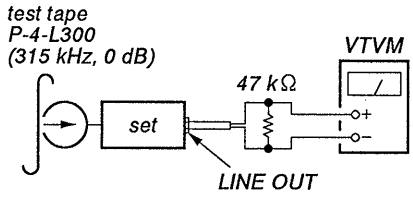
Frequency difference between the begining and the end of the tape should be within 5%.

Adjustment Location: main board (See Page 6.)

Playback Level Adjustment DECK A DECK B

Procedure:

Mode: Playback



Adjust RV101 (L-ch) and RV201 (R-ch) for DECK A and RV102 (L-ch) and RV202 (R-ch) for DECK B so that the reading on VTVM meets the adjustment limits below.

Adjustment Limits:

LINE OUT level: − 7.7 ± 0.5 dB (0.30 − 0.34 V)

Level difference between channels: less than 0.5 dB

Check that the LINE OUT level does not change even if Playback and Stop operation is repeated several times.

Adjustment Location: Main board (See Page 6.)

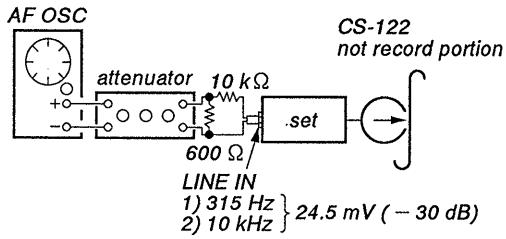
Record Bias Adjustment DECK B

Starting:

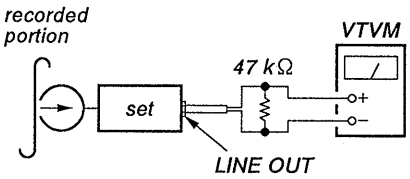
REC LEVEL control: Standard Record (See page 3.)

Procedure:

1. Mode: Record



2. Mode: Playback



3. Playback the signal recorded in step 1.

Confirm that the 10 kHz playback output is 0 ± 0.5 dB relative to the 315 Hz output. If necessary, adjust RV403 (L-ch) and RV503 (R-ch) and repeat the steps given above.

Adjustment Location: main board (See Page 6.)

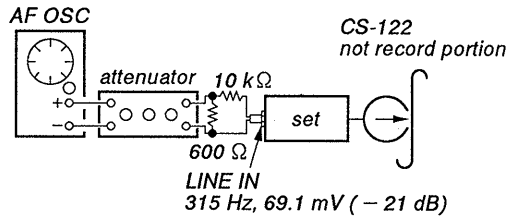
Record Level Adjustment DECK B

Starting:

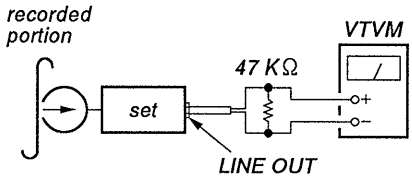
REC LEVEL control: Standard Record (See page 3.)

Procedure:

1. Mode: Record



2. Mode: Playback



3. Playback the signal recorded in step 1.

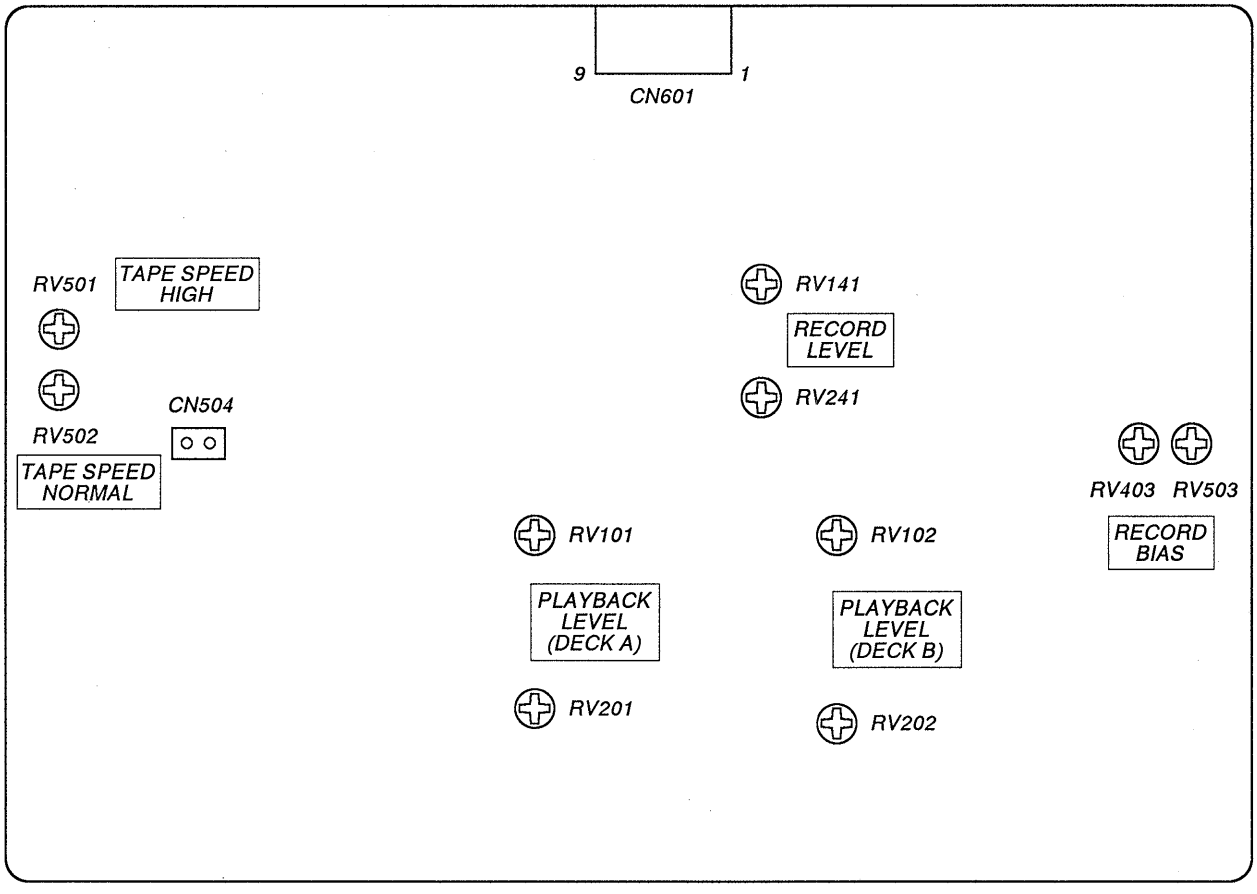
Confirm that signal level is within the adjustment limits below. If necessary, adjust RV141 (L-ch) and RV241 (R-ch) and repeat the step 1 − 2.

Adjustment Limits: − 22.7 dB ± 0.5 dB (53.6 − 60.2 mV)

Adjustment Location: main board (component side) (See Page 6.)

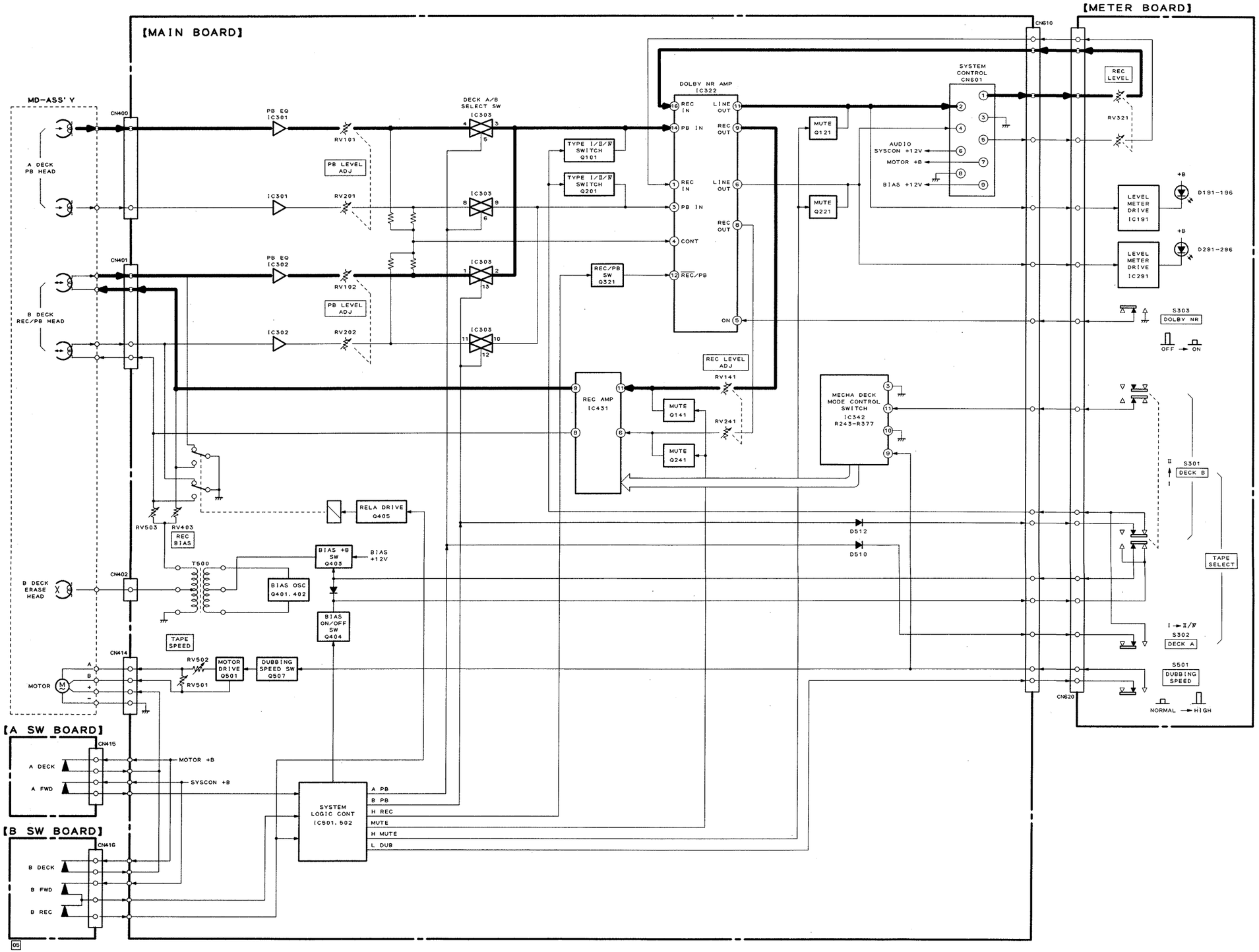
- **Adjusting Parts Location**

【MAIN BOARD】 – Component Side –



SECTION 3
DIAGRAMS

3-1. BLOCK DIAGRAM



3-2. PRINTED WIRING BOARDS

Note on Schematic Diagram:

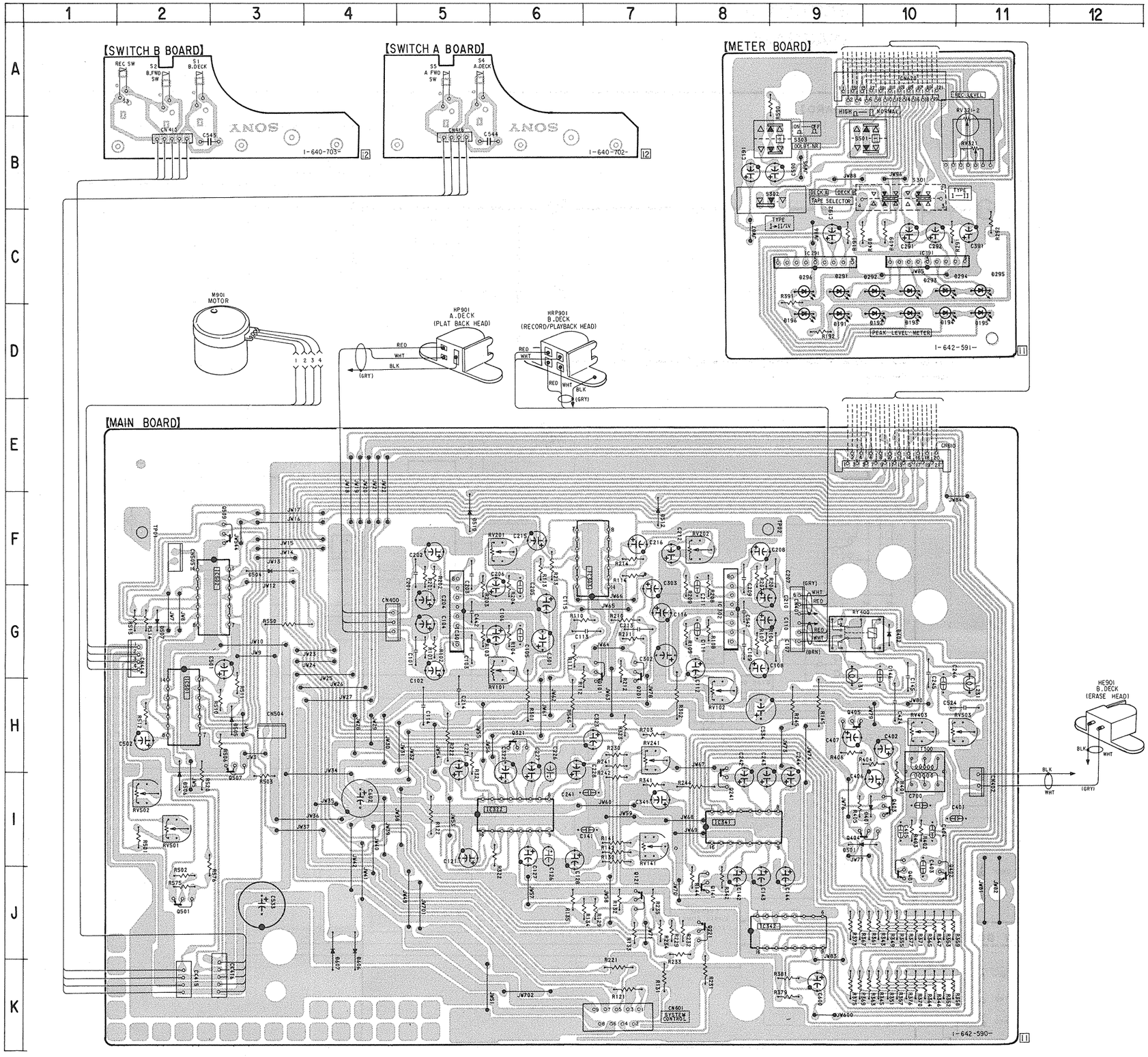
- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- B : B + Line.
- : panel designation.
- : adjustment for repair.
- Power voltage is fed with TA-AV421 from CN601 SYSTEM CONTROL.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : REC/PB
  《 》: HIGH SPEED DUBBING
  < > : REC
- Voltages are taken with a VOM (10 MΩ/V).
  Voltage variations may be noted due to normal production tolerances.
- Signal path.
  : PB (DECK B)
  : REC (DECK B)

Note on Printed Wiring Board:

- ○——— : parts extracted from the component side.

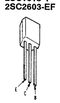
• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D191	D-9	IC291	C-9
D192	D-10	IC301	G-5
D193	D-10	IC302	G-8
D194	D-10	IC303	F-7
D195	D-11	IC322	I-6
D196	D-9	IC341	I-8
D291	D-9	IC342	J-9
D292	D-10	IC501	H-2
D293	D-10	IC502	G-3
D294	D-10		
D295	D-11	Q101	G-7
D296	D-9	Q121	J-7
D401	I-10	Q141	J-8
D402	G-10	Q201	G-7
D501	I-9	Q221	J-8
D504	F-3	Q241	I-8
D505	H-3	Q321	H-6
D506	I-2	Q401	J-10
D507	G-2	Q402	J-10
D510	F-5	Q403	I-10
D512	F-7	Q404	I-10
D606	J-4	Q405	H-9
D607	J-4	Q501	J-2
		Q507	H-3
IC191	C-10	Q509	F-3

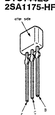


• Semiconductor Lead Layouts

DTA114ES
DTA144ES
DTC114ES
2SC1815-Y
2SC2603-EF



DTC144ES
2SA1175-HFE



2SC945P

1SS120
11ES2

SEL4214S

【MAIN BOARD】

【METER BOARD】

MD-ASSY

【SWITCH A BOARD】

【SWITCH B BOARD】

IC301 PB,EQ

IC302 PB,EQ

IC303 DECK A/B SELECT SWITCH

IC322 DOLBY NRAMP

IC341 REC AMP

IC342 MECHA,DECK MODE,CONTROL,SWITCH

IC501 SYSTEM LOGIC LCNT

IC502 SYSTEM LOGIC LCNT

IC191 PEAK LEVEL METER

IC291 PEAK LEVEL METER

Q101 SWITCH

Q201 SWITCH

Q301 REC/PB SWITCH

Q401,402 BIAS,OSC

Q403 BIAS/PB SW

Q404 BIAS ON/OFF SW

Q405 REARDRIVE

Q501 MOTOR DRIVE

Q507 DUBING SPEED SW

Q141 MUTE

Q241 MUT

Q221 MUTE

RV101,201 PB LEVEL ADJ

RV202,302 PB LEVEL ADJ

RV321 REC LEVEL

RV603,503 REC BIAS

RV501,502 TAPE SPEED

REC LEVEL ADJ

SYSTEM CONTROL

DOLBY-SW

TAPE SELECTOR

DUBING SPEED

NORMAL

HIGH

CN601 (1/2) 9P

CN601 (2/2) 9P

CN610

CN620

AUDIO SYSCON +12V

MOTOR +B

BIAS +12V

MOTOR-GND

HP901 A-DECK PB-HEAD

HRP901 B-DECK REC/PB-HEAD

HE901 B-DECK ERASE-HEAD

M901 MOTOR

S1 A-DECK

S2 A FWD SW

S3 A REC SW

S4 B-DECK

S5 B FWD SW

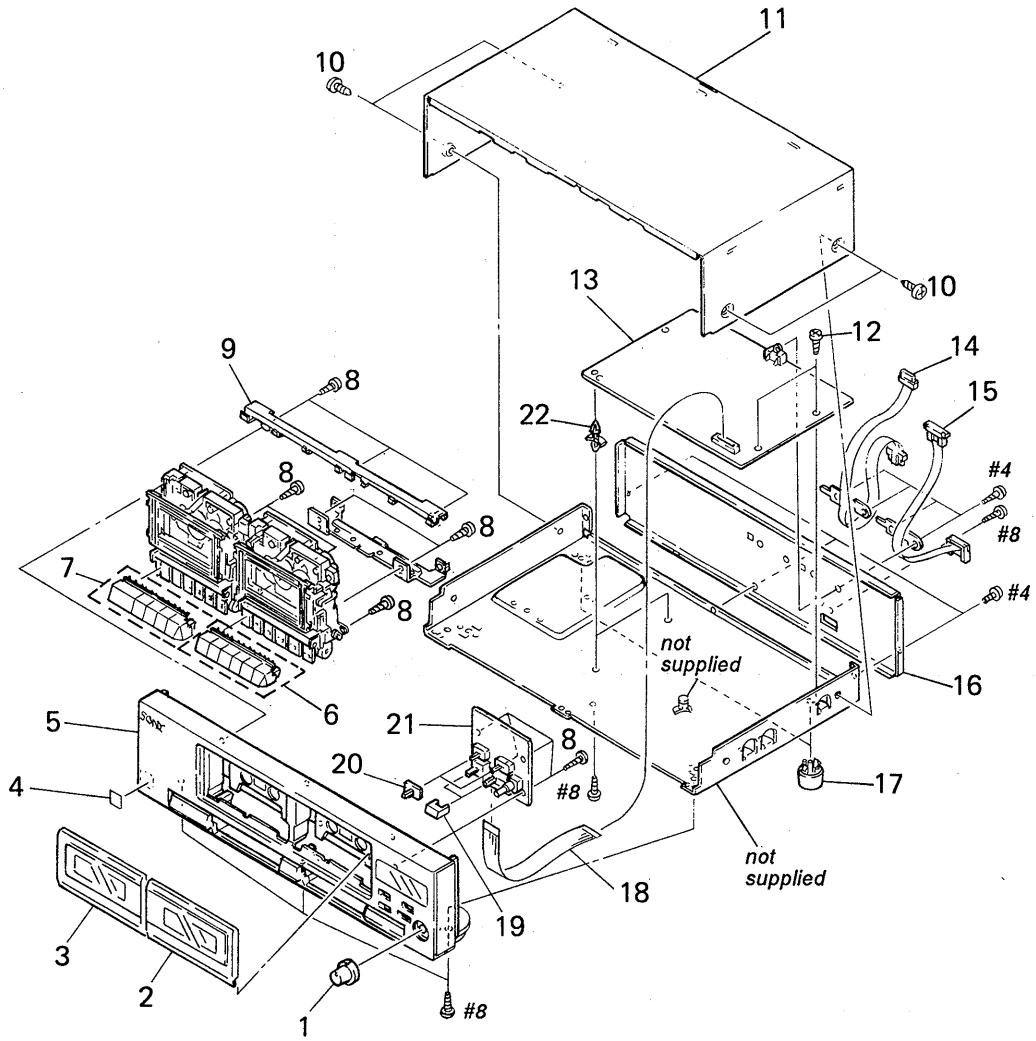
S6 B REC SW

SECTION 4
EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

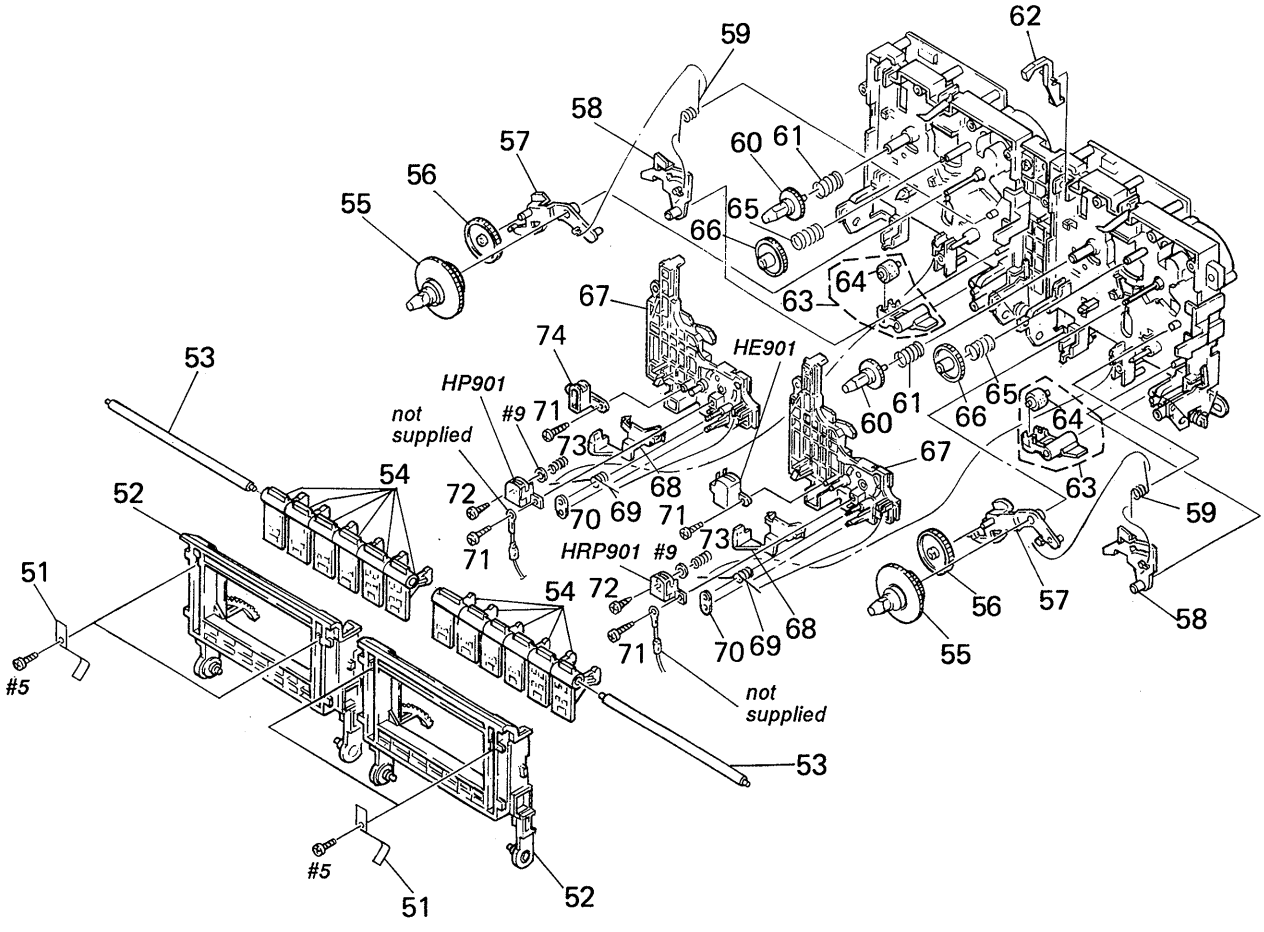
(1) FRONT PANEL AND CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
1	4-949-640-11	KNOB (DIA. 21)	
2	A-4325-437-A	LID (B) ASSY, CASSETTE (US)	
2	A-4325-439-A	LID (B) ASSY, CASSETTE (Canadian, E)	
3	A-4325-436-A	LID (A) ASSY, CASSETTE (US)	
3	A-4325-438-A	LID (A) ASSY, CASSETTE (Canadian, E)	
4	3-703-710-41	STICKER, SONY SYMBOL (12)	
5	A-2004-012-A	PANEL ASSY, FRONT (US)	
5	A-2004-013-A	PANEL ASSY, FRONT (Canadian)	
5	A-2004-014-A	PANEL ASSY, FRONT (E)	
6	4-949-639-01	BUTTON (BLOCK B)	
7	4-949-638-01	BUTTON (BLOCK A)	
8	4-928-635-21	SCREW, +BV (2.6X10) TAPPING	
9	3-375-844-01	BRACKET (CASE)	
10	3-363-099-01	SCREW (CASE +3X8 TP2)	
* 11	4-943-088-71	CASE	
12	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6	

Ref. No.	Part No.	Description	Remark
* 13	A-2006-717-A	MAIN BOARD, COMPLETE	
14	1-690-674-21	CORD (WITH CONNECTOR) (US)	
15	1-690-672-11	CORD (WITH CONNECTOR) (US)	
* 16	3-375-840-01	PANEL, BACK (US)	
* 16	3-375-840-11	PANEL, BACK (Canadian)	
* 16	3-375-840-21	PANEL, BACK (E)	
17	X-4941-228-1	FOOT ASSY	
18	1-590-243-11	WIRE, FLAT TYPE (21 CORE)	
19	4-949-658-01	BUTTON (TC)	
20	4-948-273-01	KNOB, SLIDE	
* 21	1-642-591-11	METER BOARD	
* 22	3-346-265-11	HOLDER, PC BOARD	

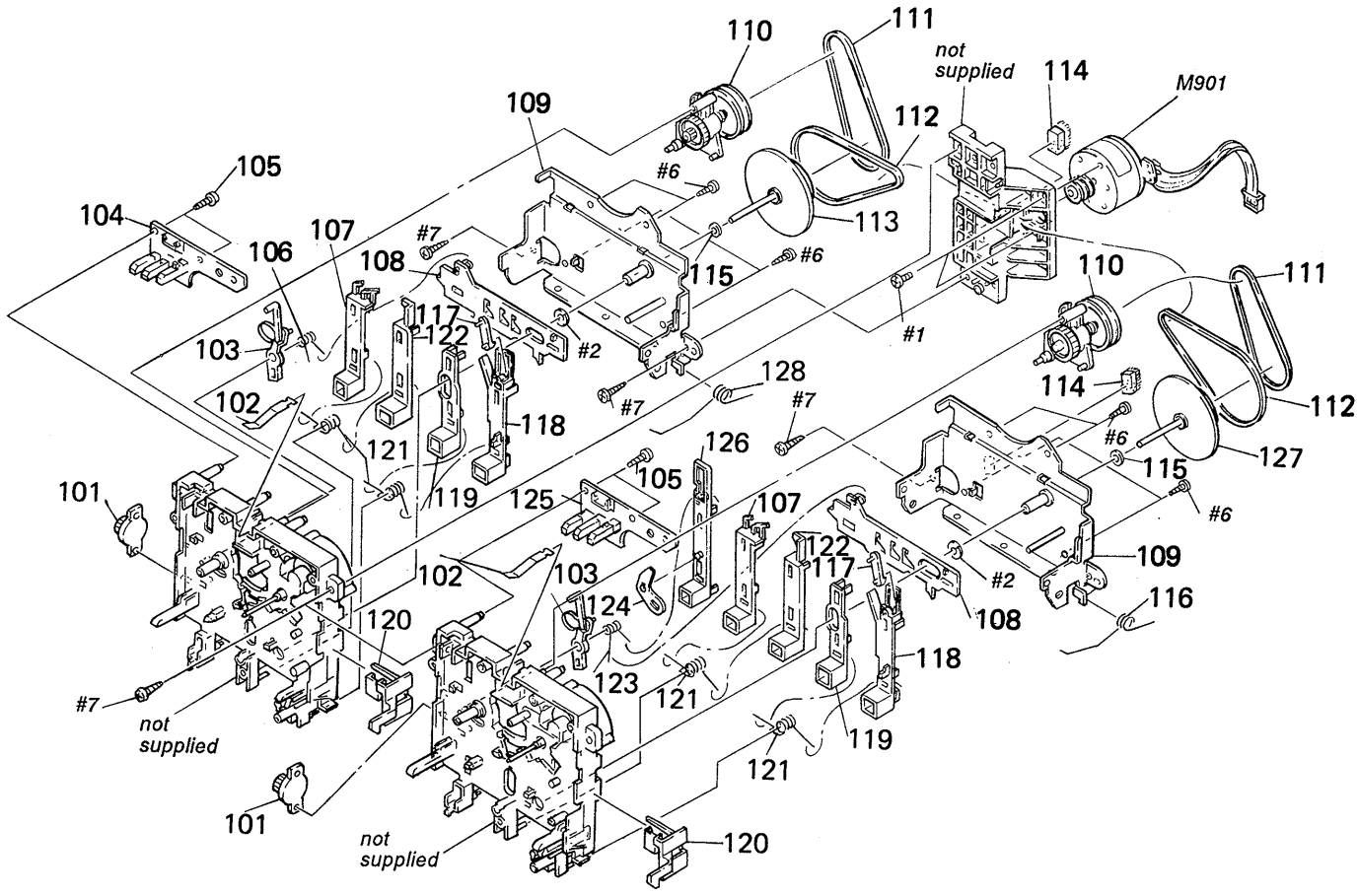
(2) MECHANISM DECK (TCM-180VW-H5)



Ref. No.	Part No.	Description	Remark
51	3-358-209-01	SPRING (CASSETTE HOLDER), LEAF	
52	3-358-266-02	HOLDER, CASSETTE	
53	3-371-917-01	SHAFT (BUTTON SHAFT 4)	
54	3-369-335-01	LEVER (BUTTON BASE F)	
55	X-3358-203-1	TABLE (T) ASSY, REEL	
* 56	3-358-284-01	GEAR (TU GEAR)	
* 57	3-358-252-01	LEVER (TU ARM)	
* 58	3-358-253-01	LEVER (SHUT-OFF LEVER)	
59	3-358-243-01	SPRING (TU-SHUT), TORSION	
60	3-358-248-01	GEAR (SUPPLY REEL)	
61	3-358-208-01	SPRING (SUPPLY), COMPRESSION	
* 62	3-358-204-01	LEVER (REC SAFETY)	
63	X-3358-204-1	LEVER (PINCH LEVER) ASSY	
64	3-578-143-11	PINCH ROLLER	
65	3-358-207-01	SPRING (FF GEAR), COMPRESSION	

Ref. No.	Part No.	Description	Remark
* 66	3-358-224-01	GEAR (FF GEAR)	
67	3-358-265-01	SLIDER (HEAD PC BOARD A)	
* 68	3-358-251-01	LEVER (TENSION DETECTION ARM)	
69	3-358-228-01	SPRING, TORSION	
* 70	3-358-215-01	BUSHING (WIRE KIT RETAINER)	
71	3-358-288-11	SCREW (T), AZIMUTH	
72	3-358-288-01	SCREW (T), AZIMUTH	
73	3-358-234-01	SPRING (AZIMUTH), COMPRESSION	
* 74	3-363-931-01	GUIDE, TAPE	
HE901	1-543-673-11	HEAD, MAGNETIC (ERASE)	
HP901	1-543-319-11	HEAD, MAGNETIC (REC/PB)	
HRP901	1-543-319-11	HEAD, MAGNETIC (REC/PB)	

(3) MECHANISM DECK (TCM-180VW-H5)



Ref. No.	Part No.	Description	Remark
101	3-319-224-41	DAMPER, SMALL	
102	3-358-227-01	SPRING, LEAF	
103	3-358-286-01	LEVER (MOTOR LEVER)	
* 104	1-640-702-11	LEAF SW (A) BOARD	
105	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
106	3-358-214-01	SPRING (LOCK), TORSION	
107	3-358-258-01	SLIDER (REW)	
* 108	3-358-249-01	SLIDER (LOCK PLATE)	
* 109	X-3358-208-1	BRACKET (B) ASSY	
110	X-3358-202-1	LEVER (FR ARM) ASSY	
111	3-358-230-01	BELT (A1)	
112	3-364-777-01	BELT (WH)	
113	X-3358-205-1	FLYWHEEL (A) ASSY	
* 114	3-358-289-01	SPACER (VIBRATION PROOF MAT)	

Ref. No.	Part No.	Description	Remark
115	3-701-437-01	WASHER	
116	3-358-229-01	SPRING (LOADING), TORSION	
* 117	3-358-226-01	LEVER (PAUSE LEVER)	
118	3-358-260-01	SLIDER (PAUSE)	
119	3-358-256-01	SLIDER (STOP/EJECT)	
* 120	3-358-261-02	SLIDER (HOLDER LOCK)	
121	3-358-232-01	SPRING (S-P F-R), TORSION	
122	3-358-257-01	SLIDER (FF)	
123	3-358-233-01	SPRING (REC-LOCK), TORSION	
* 124	3-358-255-01	LEVER (GB LEVER)	
* 125	1-640-703-11	LEAF SW (B) BOARD	
126	3-358-259-01	SLIDER (REC)	
127	X-3358-206-1	FLYWHEEL (B) ASSY	
128	3-358-287-01	SPRING (LOADING A), TORSION	
M901	X-3362-377-1	MOTOR (WH) ASSY	

LEAF SW (A)

LEAF SW (B) MAIN

SECTION 5
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA ..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
*	1-640-702-11	LEAF SW (A) BOARD			
		**********			
		< CAPACITOR >			
C544	1-164-159-11	CERAMIC	0.1MF		50V
		< CONNECTOR >			
* CN416	1-564-497-11	PIN, CONNECTOR 4P			
		< SWITCH >			
S4	1-571-736-11	SWITCH, LEAF			
S5	1-571-736-11	SWITCH, LEAF			
**********					
*	1-640-703-11	LEAF SW (B) BOARD			
		**********			
		< CONNECTOR >			
* CN415	1-564-498-11	PIN, CONNECTOR 5P			
		< CAPACITOR >			
C545	1-164-159-11	CERAMIC	0.1MF		50V
		< SWITCH >			
S1	1-571-736-11	SWITCH, LEAF			
S2	1-571-736-11	SWITCH, LEAF			
S3	1-571-736-11	SWITCH, LEAF			
**********					
*	A-2006-717-A	MAIN BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-162-291-31	CERAMIC	560PF	10%	50V
C102	1-126-096-11	ELECT	10uF	20%	35V
C103	1-162-282-31	CERAMIC	100PF	10%	50V
C104	1-124-443-00	ELECT	100uF	20%	10V
C105	1-136-157-00	FILM	0.022uF	5%	50V
C106	1-124-925-11	ELECT	2.2uF	20%	100V
C107	1-162-291-31	CERAMIC	560PF	10%	50V
C108	1-126-096-11	ELECT	10uF	20%	35V
C109	1-162-282-31	CERAMIC	100PF	10%	50V
C110	1-124-443-00	ELECT	100uF	20%	10V
C111	1-136-157-00	FILM	0.022uF	5%	50V
C112	1-124-257-00	ELECT	2.2uF	20%	50V
C113	1-161-377-00	CERAMIC	0.0047uF	20%	16V
C114	1-162-289-31	CERAMIC	390PF	10%	50V
C115	1-124-927-11	ELECT	4.7uF	20%	100V
C116	1-124-927-11	ELECT	4.7uF	20%	100V
C121	1-124-925-11	ELECT	2.2uF	20%	100V
C126	1-131-587-11	TANTALUM	0.68uF	5%	35V
C127	1-124-925-11	ELECT	2.2uF	20%	100V
C128	1-124-925-11	ELECT	2.2uF	20%	100V
C141	1-136-173-00	FILM	0.47uF	5%	50V
C142	1-124-927-11	ELECT	4.7uF	20%	100V
C143	1-124-443-00	ELECT	100uF	20%	10V
C144	1-124-907-11	ELECT	10uF	20%	50V
C145	1-162-284-31	CERAMIC	150PF	10%	50V
C146	1-136-273-91	FILM	75PF	5%	630V
C201	1-162-291-31	CERAMIC	560PF	10%	50V
C202	1-126-096-11	ELECT	10uF	20%	35V
C203	1-162-282-31	CERAMIC	100PF	10%	50V
C204	1-124-443-00	ELECT	100uF	20%	10V
C205	1-136-157-00	FILM	0.022uF	5%	50V
C206	1-124-925-11	ELECT	2.2uF	20%	100V
C207	1-162-291-31	CERAMIC	560PF	10%	50V
C208	1-126-096-11	ELECT	10uF	20%	35V
C209	1-162-282-31	CERAMIC	100PF	10%	50V
C210	1-124-443-00	ELECT	100uF	20%	10V
C211	1-136-157-00	FILM	0.022uF	5%	50V

Ref. No.	Part No.	Description			Remark
C212	1-124-925-11	ELECT	2.2uF	20%	100V
C213	1-161-377-00	CERAMIC	0.0047uF	20%	16V
C214	1-162-289-31	CERAMIC	390PF	10%	50V
C215	1-124-927-11	ELECT	4.7uF	20%	100V
C216	1-124-927-11	ELECT	4.7uF	20%	100V
C221	1-124-925-11	ELECT	2.2uF	20%	100V
C226	1-131-587-11	TANTALUM	0.68uF	5%	35V
C227	1-124-925-11	ELECT	2.2uF	20%	100V
C228	1-124-925-11	ELECT	2.2uF	20%	100V
C241	1-136-173-00	FILM	0.47uF	5%	50V
C242	1-124-927-11	ELECT	4.7uF	20%	100V
C243	1-124-443-00	ELECT	100uF	20%	10V
C244	1-124-907-11	ELECT	10uF	20%	50V
C245	1-162-284-31	CERAMIC	150PF	10%	50V
C246	1-136-273-91	FILM	75PF	5%	630V
C301	1-124-478-11	ELECT	100uF	20%	25V
C302	1-124-478-11	ELECT	100uF	20%	25V
C303	1-124-925-11	ELECT	2.2uF	20%	100V
C322	1-126-176-11	ELECT	220uF	20%	10V
C323	1-124-903-11	ELECT	1uF	20%	50V
C341	1-124-907-11	ELECT	10uF	20%	50V
C401	1-136-561-11	FILM	0.0068uF	5%	630V
C402	1-124-903-11	ELECT	1uF	20%	50V
C403	1-130-482-00	MYLAR	0.0082uF	5%	50V
C404	1-130-478-00	MYLAR	0.0039uF	5%	50V
C405	1-130-478-00	MYLAR	0.0039uF	5%	50V
C406	1-124-902-00	ELECT	0.47uF	20%	50V
C407	1-124-925-11	ELECT	2.2uF	20%	100V
C424	1-162-280-31	CERAMIC	82PF	10%	50V
C442	1-164-159-11	CERAMIC	0.1uF		50V
C501	1-124-927-11	ELECT	4.7uF	20%	100V
C502	1-124-925-11	ELECT	2.2uF	20%	100V
C524	1-162-280-31	CERAMIC	82PF	10%	50V
C533	1-124-360-00	ELECT	1000uF	20%	16V
C534	1-124-120-11	ELECT	220uF	20%	25V
C542	1-164-159-11	CERAMIC	0.1uF		50V
C600	1-124-907-11	ELECT	10uF	20%	50V
C602	1-126-103-11	ELECT	470uF	20%	16V
C700	1-130-482-00	MYLAR	0.0082uF	5%	50V
		< CONNECTOR >			
* CN400	1-564-506-11	PLUG, CONNECTOR 3P			
* CN401	1-564-509-11	PLUG, CONNECTOR 6P			
* CN402	1-564-505-11	PLUG, CONNECTOR 2P			
* CN414	1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P			
* CN504	1-564-505-11	PLUG, CONNECTOR 2P			
* CN505	1-564-505-11	PLUG, CONNECTOR 2P			
CN601	1-565-949-11	SOCKET, CONNECTOR 9P			
CN610	1-568-838-11	SOCKET, CONNECTOR 21P			
		< DIODE >			
D401	8-719-912-20	DIODE	1SS120		
D402	8-719-912-20	DIODE	1SS120		
D501	8-719-912-20	DIODE	1SS120		
D504	8-719-912-20	DIODE	1SS120		
D505	8-719-912-20	DIODE	1SS120		
D506	8-719-912-20	DIODE	1SS120		
D507	8-719-912-20	DIODE	1SS120		
D510	8-719-912-20	DIODE	1SS120		
D512	8-719-912-20	DIODE	1SS120		
D606	8-719-200-82	DIODE	11ES2		
D607	8-719-200-82	DIODE	11ES2		
		< IC >			
IC301	8-759-800-36	IC	LA3160		
IC302	8-759-800-36	IC	LA3160		
IC303	8-759-000-49	IC	MC14066BCP		
IC322	8-752-057-19	IC	CXA1101P		
IC341	8-752-038-02	IC	CXA1198AP		
IC342	8-759-000-47	IC	MC14051BCP		
IC501	8-759-140-11	IC	uPD4011BC		
IC502	8-759-040-01	IC	MC14001BCP		
		< COIL >			
L131	1-410-780-11	INDUCTOR 27mH			
L231	1-410-780-11	INDUCTOR 27mH			
		< TRANSISTOR >			
Q101	8-729-900-89	TRANSISTOR	DTC144ES		
Q121	8-729-620-05	TRANSISTOR	2SC2603-EF		
Q141	8-729-620-05	TRANSISTOR	2SC2603-EF		
Q201	8-729-900-89	TRANSISTOR	DTC144ES		
Q221	8-729-620-05	TRANSISTOR	2SC2603-EF		
Q241	8-729-620-05	TRANSISTOR	2SC2603-EF		
Q321	8-729-900-89	TRANSISTOR	DTC144ES		
Q401	8-729-194-57	TRANSISTOR	2SC945-P		
Q402	8-729-194-57	TRANSISTOR	2SC945-P		
Q403	8-729-281-52	TRANSISTOR	2SC1815-Y		
Q404	8-729-900-61	TRANSISTOR	DTA114ES		
Q405	8-729-900-80	TRANSISTOR	DTC114ES		
Q501	8-729-119-76	TRANSISTOR	2SA1175-HFE		
Q507	8-729-900-89	TRANSISTOR	DTC144ES		
Q509	8-729-900-65	TRANSISTOR	DTA144ES		
		< RESISTOR >			
R101	1-247-889-00	CARBON	270K	5%	1/4W

MAIN

Ref. No.	Part No.	Description			Remark
R102	1-249-404-00	CARBON	82	5%	1/4W
R103	1-247-882-11	CARBON	130K	5%	1/4W
R104	1-249-426-11	CARBON	5.6K	5%	1/4W
R106	1-247-889-00	CARBON	270K	5%	1/4W
R107	1-249-404-00	CARBON	82	5%	1/4W
R108	1-247-882-11	CARBON	130K	5%	1/4W
R109	1-249-426-11	CARBON	5.6K	5%	1/4W
R110	1-249-430-11	CARBON	12K	5%	1/4W
R111	1-249-431-11	CARBON	15K	5%	1/4W
R112	1-247-887-00	CARBON	220K	5%	1/4W
R113	1-249-441-11	CARBON	100K	5%	1/4W
R114	1-249-441-11	CARBON	100K	5%	1/4W
R121	1-249-435-11	CARBON	33K	5%	1/4W
R122	1-249-417-11	CARBON	1K	5%	1/4W
R129	1-249-421-11	CARBON	2.2K	5%	1/4W
R130	1-249-429-11	CARBON	10K	5%	1/4W
R131	1-249-417-11	CARBON	1K	5%	1/4W
R132	1-249-430-11	CARBON	12K	5%	1/4W
R133	1-249-425-11	CARBON	4.7K	5%	1/4W
R134	1-249-434-11	CARBON	27K	5%	1/4W
R135	1-247-848-11	CARBON	5.1K	5%	1/4W
R141	1-249-426-11	CARBON	5.6K	5%	1/4W
R142	1-249-421-11	CARBON	2.2K	5%	1/4W
R144	1-249-425-11	CARBON	4.7K	5%	1/4W
R145	1-249-430-11	CARBON	12K	5%	1/4W
R201	1-247-889-00	CARBON	270K	5%	1/4W
R202	1-249-404-00	CARBON	82	5%	1/4W
R203	1-247-882-11	CARBON	130K	5%	1/4W
R204	1-249-426-11	CARBON	5.6K	5%	1/4W
R206	1-247-889-00	CARBON	270K	5%	1/4W
R207	1-249-404-00	CARBON	82	5%	1/4W
R208	1-247-882-11	CARBON	130K	5%	1/4W
R209	1-249-426-11	CARBON	5.6K	5%	1/4W
R210	1-249-430-11	CARBON	12K	5%	1/4W
R211	1-249-431-11	CARBON	15K	5%	1/4W
R212	1-247-887-00	CARBON	220K	5%	1/4W
R213	1-249-441-11	CARBON	100K	5%	1/4W
R214	1-249-441-11	CARBON	100K	5%	1/4W
R221	1-249-435-11	CARBON	33K	5%	1/4W
R222	1-249-417-11	CARBON	1K	5%	1/4W
R229	1-249-421-11	CARBON	2.2K	5%	1/4W
R230	1-249-429-11	CARBON	10K	5%	1/4W
R231	1-249-417-11	CARBON	1K	5%	1/4W
R232	1-249-430-11	CARBON	12K	5%	1/4W
R233	1-249-425-11	CARBON	4.7K	5%	1/4W
R234	1-249-434-11	CARBON	27K	5%	1/4W
R235	1-247-848-11	CARBON	5.1K	5%	1/4W
R241	1-249-426-11	CARBON	5.6K	5%	1/4W
R242	1-249-421-11	CARBON	2.2K	5%	1/4W

Ref. No.	Part No.	Description			Remark
R244	1-249-425-11	CARBON	4.7K	5%	1/4W
R245	1-249-430-11	CARBON	12K	5%	1/4W
R301	1-260-091-11	CARBON	220	5%	1/2W
R302	1-260-091-11	CARBON	220	5%	1/2W
R321	1-249-433-11	CARBON	22K	5%	1/4W
R322	1-215-460-00	METAL	43K	1%	1/6W
R323	1-249-437-11	CARBON	47K	5%	1/4W
R341	1-249-441-11	CARBON	100K	5%	1/4W
R342	1-247-864-11	CARBON	24K	5%	1/4W
R343	1-247-887-00	CARBON	220K	5%	1/4W
R345	1-247-881-00	CARBON	120K	5%	1/4W
R346	1-249-440-11	CARBON	82K	5%	1/4W
R347	1-249-435-11	CARBON	33K	5%	1/4W
R349	1-249-438-11	CARBON	56K	5%	1/4W
R351	1-249-436-11	CARBON	39K	5%	1/4W
R352	1-247-874-11	CARBON	62K	5%	1/4W
R353	1-247-870-11	CARBON	43K	5%	1/4W
R355	1-249-440-11	CARBON	82K	5%	1/4W
R357	1-247-876-11	CARBON	75K	5%	1/4W
R358	1-249-437-11	CARBON	47K	5%	1/4W
R359	1-249-434-11	CARBON	27K	5%	1/4W
R361	1-247-881-00	CARBON	120K	5%	1/4W
R363	1-247-882-11	CARBON	130K	5%	1/4W
R364	1-247-872-11	CARBON	51K	5%	1/4W
R365	1-249-437-11	CARBON	47K	5%	1/4W
R367	1-249-438-11	CARBON	56K	5%	1/4W
R369	1-247-876-11	CARBON	75K	5%	1/4W
R370	1-249-437-11	CARBON	47K	5%	1/4W
R371	1-247-876-11	CARBON	75K	5%	1/4W
R373	1-249-441-11	CARBON	100K	5%	1/4W
R375	1-249-436-11	CARBON	39K	5%	1/4W
R376	1-247-881-00	CARBON	120K	5%	1/4W
R377	1-247-881-00	CARBON	120K	5%	1/4W
R379	1-249-437-11	CARBON	47K	5%	1/4W
R381	1-249-433-11	CARBON	22K	5%	1/4W
R401	1-249-393-11	CARBON	10	5%	1/4W
R402	1-249-433-11	CARBON	22K	5%	1/4W
R403	1-249-433-11	CARBON	22K	5%	1/4W
R404	1-249-429-11	CARBON	10K	5%	1/4W
R405	1-249-417-11	CARBON	1K	5%	1/4W
R406	1-249-425-11	CARBON	4.7K	5%	1/4W
R501	1-249-426-11	CARBON	5.6K	5%	1/4W
R502	1-249-417-11	CARBON	1K	5%	1/4W
R503	1-249-426-11	CARBON	5.6K	5%	1/4W
R506	1-249-426-11	CARBON	5.6K	5%	1/4W
R510	1-249-427-11	CARBON	6.8K	5%	1/4W
R511	1-249-435-11	CARBON	33K	5%	1/4W
R512	1-249-439-11	CARBON	68K	5%	1/4W
R513	1-249-429-11	CARBON	10K	5%	1/4W

Ref. No.	Part No.	Description			Remark
R514	1-249-441-11	CARBON	100K	5%	1/4W
R520	1-249-426-11	CARBON	5.6K	5%	1/4W
R545	1-249-437-11	CARBON	47K	5%	1/4W
R550	1-249-429-11	CARBON	10K	5%	1/4W
R575	1-249-441-11	CARBON	100K	5%	1/4W
R576	1-247-887-00	CARBON	220K	5%	1/4W
R703	1-249-421-11	CARBON	2.2K	5%	1/4W
		< VARIABLE RESISTOR >			
RV101	1-238-600-11	RES, ADJ, CARBON 10K			
RV102	1-238-600-11	RES, ADJ, CARBON 10K			
RV141	1-238-600-11	RES, ADJ, CARBON 10K			
RV201	1-238-600-11	RES, ADJ, CARBON 10K			
RV202	1-238-600-11	RES, ADJ, CARBON 10K			
RV241	1-238-600-11	RES, ADJ, CARBON 10K			
RV403	1-238-604-11	RES, ADJ, CARBON 220K			
RV501	1-238-598-11	RES, ADJ, CARBON 2.2K			
RV502	1-238-598-11	RES, ADJ, CARBON 2.2K			
RV503	1-238-604-11	RES, ADJ, CARBON 220K			
		< RELAY >			
RY400	1-515-614-11	RELAY			
		< TRANSFORMER >			
T500	1-433-394-11	TRANSFORMER, BIAS OSCILLATION			
**********					
*	1-642-591-11	METER BOARD			
		**********			
		< CAPACITOR >			
C191	1-124-925-11	ELECT	2.2uF	20%	100V
C192	1-124-907-11	ELECT	10uF	20%	50V
C291	1-124-257-00	ELECT	2.2uF	20%	50V
C292	1-126-096-11	ELECT	10uF	20%	35V
C391	1-126-096-11	ELECT	10uF	20%	35V
C590	1-124-903-11	ELECT	1uF	20%	50V
		< CONNECTOR >			
* CN620	1-568-864-11	SOCKET, CONNECTOR 21P			
		< DIODE >			
D191	8-719-304-32	LED SEL4214S-C			
D192	8-719-304-32	LED SEL4214S-C			
D193	8-719-304-32	LED SEL4214S-C			
D194	8-719-304-32	LED SEL4214S-C			
D195	8-719-304-32	LED SEL4214S-C			

Ref. No.	Part No.	Description			Remark
D196	8-719-304-32	LED SEL4214S-C			
D291	8-719-304-32	LED SEL4214S-C			
D292	8-719-304-32	LED SEL4214S-C			
D293	8-719-304-32	LED SEL4214S-C			
D294	8-719-304-32	LED SEL4214S-C			
D295	8-719-304-32	LED SEL4214S-C			
D296	8-719-304-32	LED SEL4214S-C			
		< IC >			
IC191	8-759-917-42	IC IR2E31A			
IC291	8-759-917-42	IC IR2E31A			
		< RESISTOR >			
R191	1-249-441-11	CARBON	100K	5%	1/4W
R192	1-249-405-11	CARBON	100	5%	1/4W
R291	1-249-441-11	CARBON	100K	5%	1/4W
R292	1-249-405-11	CARBON	100	5%	1/4W
R391	1-249-414-11	CARBON	560	5%	1/4W
R408	1-247-852-11	CARBON	7.5K	5%	1/4W
R409	1-247-846-11	CARBON	4.3K	5%	1/4W
R590	1-249-417-11	CARBON	1K	5%	1/4W
		< VARIABLE RESISTOR >			
RV321	1-241-815-11	RES, VAR, CARBON 20K/20K (REC LEVEL)			
		< SWITCH >			
S301	1-571-062-11	SWITCH, SLIDE (DECK B TAPE SELECTOR)			
S302	1-692-060-11	SWITCH, LEVER(SLIDE) (DECK A TAPE SELECT)			
S303	1-572-714-11	SWITCH, PUSH (DOLBY NR)			
S501	1-572-714-11	SWITCH, PUSH (DUBBUNG SPEED)			
**********					
		MISCELLANEOUS			
		**********			
	1-590-243-11	WIRE, FLAT TYPE (21 CORE)			
	1-690-672-11	CORD (WITH CONNECTOR) (US)			
	1-690-674-21	CORD (WITH CONNECTOR) (US)			
HE901	1-543-673-11	HEAD, MAGNETIC (ERASE)			
HP901	1-543-319-11	HEAD, MAGNETIC (REC/PB)			
HRP901	1-543-319-11	HEAD, MAGNETIC (REC/PB)			
M901	X-3362-377-1	MOTOR (WH) ASSY			
**********					
		ACCESSORIES & PACKING MATERIALS			
		**********			
*	3-375-945-01	CUSHION			
*	3-376-136-01	CUSHION (HALF)			

Ref. No.	Part No.	Description	Remark

****

****
HARDWARE LIST
****

#1	7-621-775-20	SCREW +B 2.6X5
#2	7-623-921-01	RING, RETAINING, CAPSTAN
#3	7-682-548-04	SCREW +BVTT 3X8 (S)
#4	7-682-548-09	SCREW +BVTT 3X8 (S)
#5	7-685-103-19	SCREW +P 2X5 TYPE2 NON-SLIT
#6	7-685-133-19	SCREW +P 2.6X6 TYPE2
#7	7-685-135-19	SCREW +BTP 2.6X10 TYPE2 N-S
#8	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#9	7-688-001-01	W 2, SMALL

9-957-040-11

Sony Corporation
Audio Group

English
92D0542-1
Printed in Japan
© 1992. 4

Published by Customer Relations and Service Group

TC-W421

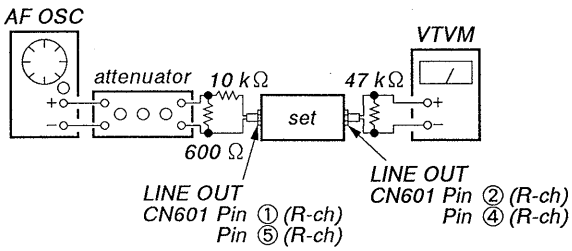
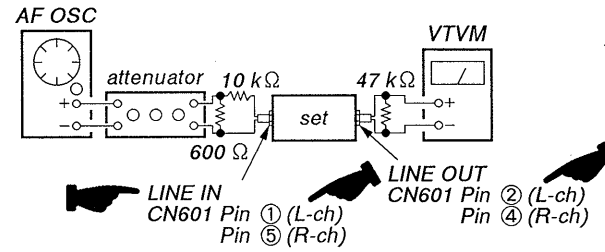
SONY
SERVICE MANUAL

US Model
Canadian Model
E Model

CORRECTION-1

Please correct your service manual.

☛ : Corrected portion

Page	Incorrect	Correct
3	**2-2. ELECTRICAL ADJUSTMENTS** **Note:** The adjustment should be performed in the order given in the service manual. As a rule, adjustments about playback should be performed before those about recording. The adjustments should be performed for L-CH and R-CH. • Switches and controls should be set as follows unless otherwise specified. DOLBY NR switch: OFF • Standard Record: Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level. – Record Mode –  **0 dB=0.775 V** **• Standard Input Level** **Input terminal** — LINE OUT (CN601 Pin ①, ⑤) **Source impedance** — 10 kΩ **Input level** — 0.25 V (− 10dB) **• Standard Output Level** **Output terminal** — LINE OUT (CN601 Pin ②, ④) **Load impedance** — 47 kΩ **Output level** — 0.32 V (− 7.7 dB)	**2-2. ELECTRICAL ADJUSTMENTS** **Note:** The adjustment should be performed in the order given in the service manual. As a rule, adjustments about playback should be performed before those about recording. The adjustments should be performed for L-CH and R-CH. • Switches and controls should be set as follows unless otherwise specified. ☛ DOLBY NR switch: OFF TAPE SELECTOR switch: TYPE-1 (NORMAL) • Standard Record: Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level. ☛ Before recording short in CN505 with a lead wire, otherwise MUTING function and output signal does not appear at LINE-OUT terminals. – Record Mode –  **0 dB=0.775 V** **• Standard Input Level** **Input terminal** — LINE OUT (CN601 Pin ①, ⑤) **Source impedance** — 10 kΩ **Input level** — 0.5 V (− 3.8 dB) ☛ **• Standard Output Level** **Output terminal** — LINE OUT (CN601 Pin ②, ④) **Load impedance** — 47 kΩ **Output level** — 0.5 V (− 3.8 dB) ☛

<table>
<tr><th>Page</th><th>Incorrect</th><th>Correct</th></tr>
<tr><td>3</td><td>

• **Test tape**

Type	Signal	Used for
P-4-A100	10 kHz, − 10 dB	Azimuth adjustment
P-4-L300	315 Hz, 0 dB	PB level adjustment
WS-48A	3 kHz, 0 dB	Tape speed adjustment

</td><td>

• **Test tape**

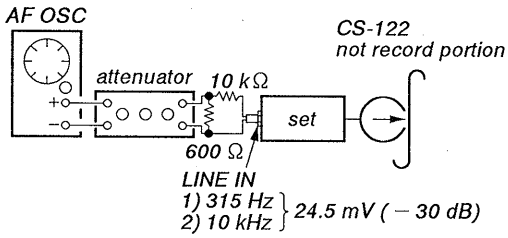
Type	Signal	Used for
P-4-A100	10 kHz, − 10 dB	Azimuth adjustment
P-4-L300	315 Hz, 0 dB	PB level adjustment
WS-48B	3 kHz, 0 dB	Tape speed adjustment

</td></tr>
<tr><td>5</td><td>

Record Bias Adjustment DECK B

Starting:
REC LEVEL control: Standard Record (See page 3.)

Procedure:
1. Mode: Record

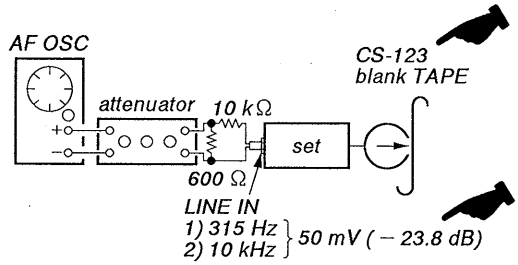


</td><td>

Record Bias Adjustment DECK B

Starting:
REC LEVEL control: Standard Record (See page 3.)

Procedure:
1. Mode: Record

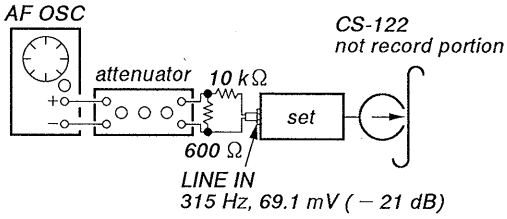


</td></tr>
<tr><td>5</td><td>

Record Level Adjustment DECK B

Starting:
REC LEVEL control: Standard Record (See page 3.)

Procedure:
1. Mode: Record



3. Playback the signal recorded in step 1.

Confirm that signal level is within the adjustment limits below. If necessary, adjust RV141 (L-ch) and RV241 (R-ch) and repeat the step 1 − 2.

Adjustment Limits: − 22.7 dB ± 0.5 dB (53.6 − 60.2 mV)

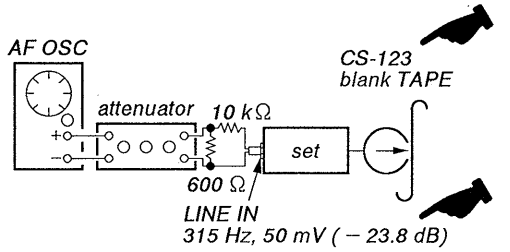
Adjustment Location: main board (component side) (See Page 6.)

</td><td>

Record Level Adjustment DECK B

Starting:
REC LEVEL control: Standard Record (See page 3.)

Procedure:
1. Mode: Record



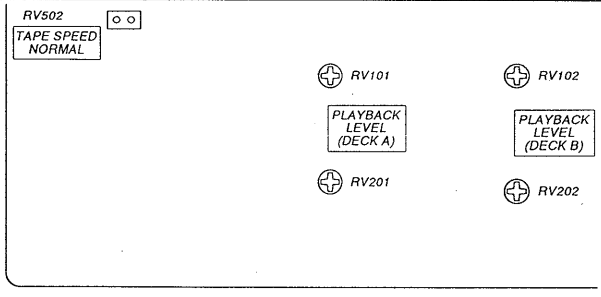
3. Playback the signal recorded in step 1.

Confirm that signal level is within the adjustment limits below. If necessary, adjust RV141 (L-ch) and RV241 (R-ch) and repeat the step 1 − 2.

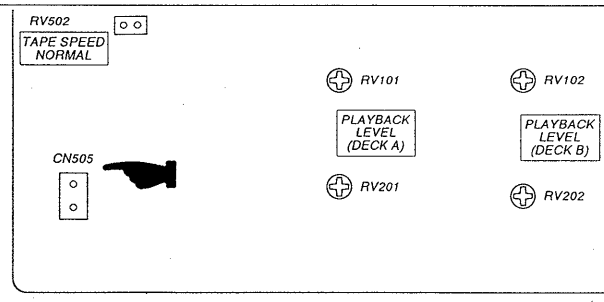
Adjustment Limits: − 23.8 dB ± 0.5 dB (47.2 − 53.0 mV)

Adjustment Location: main board (component side) (See Page 6.)

</td></tr>
<tr><td>6</td><td>



</td><td>



</td></tr>
</table>

© 1992. 5

Published by Customer Relations and Service Group